



conducted in two Brazilian coastal regions where traditional farmers cultivate manioc. We sampled five traditional communities in Imbituba (N=37 farmers), and six traditional communities in Paraty (N=47 farmers). Farmers were asked to free list local ethnovarieties of manioc and to inform about the origin of each variety. The significance of nestedness was evaluated by checking if the observed values within confidence intervals of 95% generated by 1000 similarly sized random networks. Farmers mentioned 27 ethnovarieties in Imbituba and 33 in Paraty. The individual-resource networks of both regions showed a high nestedness degree, measured through the nestedness overlap and decreasing fill (NODF) (relative total NODF: Paraty = 0.459,  $p < 0.001$ ; Imbituba = 0.648,  $p < 0.001$ ). NODF was higher than the null expectation in both regions. Both individual-resource networks showed a core of highly connected nodes and other nodes with few interactions, but frequently linked to the core. We conclude that the nested pattern of social networks indicates a high degree of resilience in both systems but with a higher cohesion in Imbituba due the use of a communal area when compared to the more individual and isolated pattern of Paraty.(FAPESC, IRDC).

### Part 3: Oral presentations

#### **“The seeds of our fathers”: reproducing seeds across generations in Massa Society**

*Jean Wencelius, Eric Garine*

**Abstract:** This paper presents a case study on the intergenerational transmission of sorghum seeds among the Massa-Bugudum of Northern Cameroon. Sorghum – and more precisely red sorghum – can be considered as the culturally most important crop for the Massa-Bugudum. Represented by over 13 landraces, it is their main staple crop, to which they dedicate most of their labor time and which is prescribe for a large number of rituals.

While a great deal of farmers admit having obtained their most exotic and functionally specialized sorghum landraces through their wives or in-laws, the most widespread and common ones are claimed as a legacy of their fathers. When delving more deeply into the social processes of seed inheritance, it appeared that, upon a man's death, his sorghum seeds cannot be transmitted directly to his children but solely through the intervention of his sister – or half-sister – whose bride wealth enabled him to get married. The same person is thus the key to a man's intergenerational reproduction as well as that of his seeds.

Reproducing seeds across generations, in Massa society, implies social transactions and cultural values analogous to those bearing upon the social reproduction of men.

#### **Context and semantics in exchange networks**

*Pierre Martin, Pascal Clouvel*

**Abstract:** The NETSEED project deals with strengthening management of agro-biodiversity through social networks using an interdisciplinary method for analyzing how local seed systems impact the diversity of domesticated plants. The goal of the project is to study the structure of seed exchange networks among farmers, i.e. the fluxes of ‘seeds’ (generic term for all plant propagation vectors, including true seeds and vegetative propagules) and provide comprehensive models relating plant biodiversity to socio-cultural and geographic factors. The general question is to assess how SEEN structure – the significations, directions and intensities of seed fluxes among individuals or groups exchanging seeds, and the distribution of genealogical, socio-cultural or geographical distance among these individuals or social



entities – impacts agro-biodiversity. The project gathers 12 datasets from 10 socio-ecological contexts (societies/countries) collected by different specialists from distinct disciplines: anthropology, ecology, ethnobiology, geography ... Producing a meta-analysis from the database supposes that a common collection method was adopted. Since this is not the case, the composition of databases requires the use Knowledge Management, i.e. methodologies and tools enabling a formal representation of knowledge in order to identify, create, represent and distribute insights and experiences in an organization, e.g. NETSEED. Referring to the distinction between Data, Information and Knowledge, the NETSEED datasets must be supplemented by a description of the study protocols to establish a link between Data and Knowledge. The semantic associated with the information has to be considered in the construction of this link. The purpose of this presentation is to illustrate the semantic distances between case studies described during the project workshops.

### **Seed circulation networks in agrobiodiversity conservation: concepts, methods and challenges**

*Marco Pautasso*

**Abstract:** The circulation of seed among farmers is key to agrobiodiversity conservation. Agrobiodiversity goes beyond the diversity of crop species, varieties and genes: it includes the variety of agrarian practices and landscapes, and is part of humanity's cultural heritage. Whilst agrobiodiversity conservation has received much attention from researchers and policy makers over the last decades, the role of seed circulation networks in preserving agrobiodiversity needs to be more investigated. This presentation provides a summary of key concepts, methods and challenges to better understand seed circulation networks. This improved understanding is worthwhile for its own sake, but is also essential to make possible the preservation and sustainable use of traditional crop varieties (landraces) across the world. Whilst there is a consensus that agrobiodiversity conservation and the health of ecosystems are interrelated, there is insufficient knowledge about the social and cultural dimension of environmental change in relation to seed circulation. For example, we know little about how seed circulation networks will cope with climate (e.g. precipitation) and socio-economic (e.g. family structures) changes. Methods available to study the role of seed circulation networks in the preservation of crop specific and genetic diversity range from meta-analysis to modelling and scenarios, from genetic to biogeographical studies, from anthropological and ethnographic research to the use of network analysis. We advocate a diversity of methodological approaches, so as to promote the creation of robust and policy-relevant knowledge. Outstanding challenges to make seed circulation networks work for biodiversity conservation in agro-ecosystems include: (i) the integration of ex situ and local approaches, (ii) interdisciplinary collaborations between social and natural scientists, and (iii) the use of networks as a conceptual framework able to bridge boundaries among researchers, farmers and policy makers, as well as the other various stakeholders.

### **Genetic resources sourcing strategies and behavior of scientists: results from an international survey on researchers' use and exchange practices**

*Eric W. Welch, Selim Louafi*

**Abstract:** Adopted during the first International Congress of Ethnobiology (1988), the Belem Declaration acknowledged for the first time biologists' responsibility to better address the needs of indigenous and local populations and recommended compensating them for the utilization of their biological resources and knowledge. Since then, the Convention on Biological Diversity (1992) and its recently adopted